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Rapid Temperature Switching for Time-resolved Measurements

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The ability to probe materials and reactions in real time under real operating conditions is pivotal to understanding of their structure and functional behavior. Towards this goal it is important to develop appropriate sample environments generating non-ambient operating conditions. In particular, probing the kinetics and mechanism for a reaction rely on the ability to initiate the process on a time scale that is fast relative to the reaction itself. Here we present apparatus that enables the rapid switching of temperature or reactive gas streams to initiate and characterize solid-state reactions.